

1     Claims

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3     1.     A route guidance system comprising an in-  
4     vehicle device and a central route advisory system  
5     in which the in-vehicle device comprises an audio  
6     emitter and a visual display unit adapted to provide  
7     audio and visual instructions to a user to perform  
8     manoeuvres required to complete an optimal route,  
9     wherein the optimal route is transmitted by the  
10    central route advisory system to the in-vehicle  
11    device in response to a route request from the user  
12    to a human operator in the central route advisory  
13    system to a specified destination.

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15    2.     A route guidance system as claimed in claim 1  
16    wherein the visual display unit is a monochrome  
17    display.

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19    3.     A route guidance system as claimed in claim 1  
20    or claim 2 wherein the system comprises a means for  
21    displaying on the visual display unit a junction or  
22    roundabout as the vehicle approaches it.

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24    4.     A route guidance system as claimed in any one  
25    of the preceding claims wherein the system comprises  
26    a means for displaying on the visual display unit  
27    junctions as pictographs.

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29    5.     A route guidance system as claimed in any one  
30    of the preceding claims wherein the system comprises  
31    means for displaying on the visual display unit  
32    roundabouts as pictographs.

1     6.    A route guidance system as claimed in claim 4  
2     or claim 5 wherein the system comprises a means for  
3     indicating on the displayed pictograph the required  
4     manoeuvre.

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6     7.    A route guidance system as claimed in claim 6  
7     wherein the system comprises a means for  
8     supplementing the visual instructions to perform a  
9     manoeuvre with audible instructions to perform a  
10    manoeuvre.

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12    8.    A route guidance system as claimed in any one  
13    of the preceding claims wherein the visual display  
14    unit provides a means of initiating an automatic  
15    route request in respect of a stored destination.

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17    9.    A route guidance system as claimed in any one  
18    of the preceding claims wherein the system comprises  
19    a means for displaying on the visual display unit  
20    the proximity of speed-cameras.

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22    10.   A route guidance system as claimed in any one  
23    of the preceding claims wherein the visual display  
24    unit is a colour display unit.

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26    11.   A route guidance system as claimed in claim 10  
27    wherein the system comprises a means for displaying  
28    on the colour display unit coloured road-maps of a  
29    particular region.

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31    12.   A route guidance system as claimed in claim 10  
32    or claim 11 wherein the system comprises a means for

1     superimposing onto a coloured road-map the current  
2     position of the car.

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4     13. A route guidance system as claimed in any one  
5     of claims 10 to 12 wherein the system comprises a  
6     means for superimposing onto a coloured road-map the  
7     pictograph of a junction or roundabout.

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9     14. A route guidance system as claimed in any one  
10    of claims 10 to 13 wherein the system comprises a  
11    means for providing a user-face on the colour  
12    display unit and a means for enabling a user to make  
13    a telephone call.

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15    15. A route guidance system as claimed in any one  
16    of claims 10 to 14 wherein the system comprises a  
17    means for providing a user-interface on the colour  
18    display unit and means for enabling the user to  
19    receive a telephone call.

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21    16. A route guidance system as claimed in any one  
22    of claims 10 to 15 wherein the system comprises a  
23    means for providing a user-interface on the colour  
24    display unit and means for enabling the user to  
25    receive a text-message.

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27    17. A route guidance system comprising an in-  
28    vehicle device and a central route advisory system  
29    in which the in-vehicle device comprises units  
30    adapted to provide instructions to a user to perform  
31    manoeuvres required to complete an optimal route,  
32    wherein the optimal route is determined by the

1 central route advisory system using real-time  
2 historical traffic data acquired from monitored  
3 routes together with archive data acquired from non-  
4 monitored routes and transmitted by the central  
5 route advisory system to the in-vehicle device in  
6 response to a route request from the user to a human  
7 operator in the central route advisory system to a  
8 specified destination.

9  
10 18. A route guidance system comprising an in-  
11 vehicle device and a central route advisory system  
12 in which the in-vehicle device comprises units  
13 adapted to provide instructions to a user to perform  
14 manoeuvres required to complete an optimal route,  
15 wherein the optimal route is calculated by the  
16 central route advisory system using a traffic  
17 forecasting model and transmitted by the central  
18 route advisory system to the in-vehicle device in  
19 response to a route request from the user to a human  
20 operator in the central route advisory system to a  
21 specified destination.

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23 19. A route guidance system as claimed in claim 18  
24 wherein the traffic forecasting model is time  
25 dependent.

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27 20. A route guidance system as claimed in claim 18  
28 or claim 19 wherein the central route advisory  
29 system comprises a means of predicting future  
30 traffic conditions based on the time at which the  
31 route request was received together with the time  
32 dependent traffic forecasting model.

1     21. A route guidance system comprising an in-  
2     vehicle device and a central route advisory system  
3     in which the in-vehicle device comprises units  
4     adapted to provide instructions to a user to perform  
5     manoeuvres required to complete an optimal route,  
6     wherein the optimal route is calculated by the  
7     central route advisory system taking into account  
8     the previous travelling direction of the vehicle, in  
9     response to a route request from the user to a human  
10    operator in the central route advisory system to a  
11    specified destination, and the optimal route is  
12    transmitted by the central route advisory system to  
13    the in-vehicle device.

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15    22. A route guidance system comprising an in-  
16    vehicle device and a central route advisory system  
17    in which the in-vehicle device comprises units  
18    adapted to provide instructions to a user to perform  
19    manoeuvres required to complete an optimal route,  
20    wherein the optimal route is calculated by the  
21    central route advisory system taking into account  
22    the previous travelling direction of the vehicle, in  
23    response to a route request from the user to a human  
24    operator in the central route advisory system to a  
25    specified destination, and the optimal route is  
26    transmitted by the central route advisory system to  
27    the in-vehicle device.

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- 1     23. A route guidance method comprising the steps  
2       of:  
3       (a) receiving a call from a user's in-vehicle  
4           device indicating the user's desired  
5           destination;  
6       (b) entering the user's desired destination  
7           into a route-guidance system;  
8       (c) determining the current location of the  
9           user's vehicle;  
10      (d) determining the potential routes to the  
11          desired destination;  
12      (e) ascertaining traffic conditions along the  
13          potential routes;  
14      (f) determining the optimal route to the  
15          desired destination using the distances of  
16          the potential routes and the traffic  
17          conditions along the routes;  
18      (g) establishing route key-points along the  
19          optimal route;  
20      (h) associating flags with the route key-  
21          points;  
22      (i) transmitting the route key-points and  
23          flags to the user's in-vehicle device; and  
24      (j) providing visual and audio instructions to  
25          the user as the user's vehicle approaches  
26          the route key-points along the optimal  
27          route.

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1       24. A route guidance method comprising the steps  
2           of:  
3           (a) receiving a call from a user's in-vehicle  
4           device indicating the user's desired  
5           destination;  
6           (b) determining the current location of the  
7           user's vehicle;  
8           (c) entering the user's desired destination  
9           into a route-guidance system;  
10          (d) determining the potential routes to the  
11          desired destination;  
12          (e) ascertaining traffic conditions along the  
13          potential routes;  
14          (f) determining the optimal route to the  
15          desired destination using the distances of the  
16          potential routes and the traffic conditions  
17          along the routes;  
18          (g) establishing route key-points along the  
19          optimal route;  
20          (h) associating flags with the route key-  
21          points;  
22          (i) transmitting the route key-points and  
23          flags to the user's in-vehicle device; and  
24          (j) providing instructions to the user as the  
25          user's vehicle approaches the route key-points  
26          along the optimal route.

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- 1     25. A route guidance method comprising the steps  
2         of:  
3         (a) receiving a call from a user's in-vehicle  
4         device indicating the user's desired  
5         destination;  
6         (b) entering the user's desired destination  
7         into a route-guidance system;  
8         (c) determining the current location of the  
9         user's vehicle from a dual multi-frequency tone  
10        transmission from the user's in-vehicle device;  
11        (d) determining the potential routes to the  
12        desired destination;  
13        (e) ascertaining traffic conditions along the  
14        potential routes;  
15        (f) determining the optimal route to the  
16        desired destination using the distances of the  
17        potential routes and the traffic conditions  
18        along the routes;  
19        (g) establishing route key-points along the  
20        optimal route;  
21        (h) associating flags with the route key-  
22        points;  
23        (i) transmitting the route key-points and  
24        flags to the user's in-vehicle device; and  
25        (j) providing instructions to the user as the  
26        user's vehicle approaches the route key-points  
27        along the optimal route.  
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- 29     26. A route guidance method as claimed in claim 25  
30     wherein the current position of the user's vehicle  
31     is determined from an ISDN sub-addressing  
32     transmission from the user's in-vehicle device.



1     27. A route guidance method comprising the steps  
2     of:  
3         (a) receiving a call from a user's in-vehicle  
4         device indicating the user's desired  
5         destination;  
6         (b) entering the user's desired destination  
7         into a route-guidance system;  
8         (c) determining the current location of the  
9         user's vehicle;  
10        (d) determining the potential routes to the  
11        desired destination;  
12        (e) ascertaining traffic conditions along the  
13        potential routes;  
14        (f) determining the optimal route to the  
15        desired destination using the distances of the  
16        potential routes and the traffic conditions  
17        along the routes;  
18        (g) establishing route key-points along the  
19        optimal route;  
20        (h) associating flags with the route key-  
21        points;  
22        (i) transmitting the route key-points and  
23        flags to the user's in-vehicle device;  
24        (j) using a route convergence model to  
25        determine the direction in which the user's  
26        vehicle is travelling once the vehicle  
27        commences the journey along the optimal route;  
28        and  
29        (k) providing visual and audio instructions to  
30        the user as the user's vehicle approaches the  
31        route key-points along the optimal route.  
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1     28. A route guidance method as claimed in claim 27  
2     wherein the in-vehicle device uses the route  
3     convergence model to display the current route on  
4     which the vehicle is travelling.

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